

**From the Desk of Dennis L. L. Santiago**

February 27, 2020

Ann E. Misback  
Secretary  
Board of Governors of the Federal Reserve System  
20th Street and Constitution Avenue NW  
Washington, DC 20551

and

Robert E. Feldman  
Executive Secretary  
Attention: Comments  
Federal Deposit Insurance Corporation  
550 17<sup>th</sup> Street NW  
Washington, DC 20429

Re: Comment Letter in response to Docket No. OP-1681 and RIN 3064-ZA08, Request for Information on Application of the Uniform Financial Institutions Rating System

Please find attached my individual response to Docket No. OP-1681, Request for Information on Application of the Uniform Financial Institutions Rating System. This comment letter is submitted with the objective of contributing constructive input to the regulatory process by the agencies in planning the future evolution of the Uniform Financial Institutions Rating System (UFIRS).

Respectfully Submitted,

/s/Dennis Santiago

Dennis Santiago  
Analyst and Citizen

## Attachment

### Comment Letter by Dennis L.L. Santiago in response to Docket No. OP-1681 and RIN 3064-ZA08, Request for Information on Application of the Uniform Financial Institutions Rating System

#### Introduction

##### Introduction

My name is Dennis Santiago and I am a bank risk analyst. The subject matter expertise basis for these remarks is the result of accumulated learning from developing and fielding bank risk analysis systems since 2003. I believe elements of the learning curve from some of the projects over the last seventeen years may have some utility to the U.S. Federal Reserve, Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency, and other federal and state agencies concerned with improving the systemic risk management of the US financial system.

In 2009, I developed a “Shadow” CAMELS approach designed to estimate ratings covering active U.S. depository institutions at the individual operating unit and holding company less parent levels on a quarterly basis using only public data from CALL Reports submitted by banks to the FFIEC.

Similar to agency CAMELS ratings, the “Shadow” ratings are expressed in ratings from 1 to 5. Output computational fidelity for component and composite output is to two decimal places. Unlike CAMELS ratings which are singularly specific to each institution, the “Shadow” system places emphasis on comparability among institutions to facilitate the insight purposes of other non-banking regulator agency uses. Key to this is strict adherence to relying solely on public data with evidentiary audit trail integrity to FFIEC Call Reports and other government sources.

In 2015, I developed a risk testing system for a state treasurer to assist in the management of a pooled collateral relief system. The system combined elements of CAMELS analysis methodology with O.C.C. Canary threshold test regimen methods to construct “guard rails” for lanes of safety with respect to protecting the state government from taxpayer risk much in the same way federal regulators seek to ensure safe lanes of prudential practice by depository institutions for federal taxpayers.

Like the “Shadow” CAMELS system, the state pooled collateral system also delivers ratings for use in surveillance and management on a quarterly basis. “Guard rail” margins are determined by the risk containment requirements as defined by the state. While the system focuses on institutions that have physical branches located within the state, the system coverage includes computations for all active FDIC unit institutions to enrich statistical modeling to census test fidelity.

Do note that these systems were developed to serve the needs of government entities with agency missions outside the scope of Section 10(d) of the Federal Deposit Insurance Act (FDI Act) and specifically to enable risk assessments for public use purposes also outside of the permission limitations of the Communications and Confidentiality of CAMELS ratings as defined by agency regulation and U.S.C. statutes.

The responses to the comment questions are given in the spirit responding to this passage in the RFI, *“The agencies encourage comments from interested members of the public, including, but not limited to, insured depository institutions, other financial institutions or companies, individual depositors and consumers, consumer groups, trade associations, and other members of the financial services industry.”*

Nothing within this RFI response proposes to change the methods or practices of the UFIRS regime. I believe the system as extant serves as an important pillar in maintain the safety and soundness of the US financial system at the confidential level of regulation and should continue in its present form.

This RFI response is meant solely to offer regulators thoughts on where considerations on how agencies might improve the surveillance and assessment process given advances in banking technology, changes in law, and other policy factors that might improve the CAMELS analytics regimen and raise the ability of the US regulatory system to operate at a pace faster than the emergence speed of new systemic threats to the economy; without unduly overburdening regulated institutions.

### Responses to Questions

#### **1. To what extent does each agency assign composite and component ratings in a manner that is consistent with the CAMELS rating system?**

This question is best answered by financial institutions on a case by case basis with respect to their individual CAMELS examination experiences. However, I can understand that this is a difficult question to answer by institutions owing to the individuality and confidentiality of a CAMELS rating that, by law, can only be seen by two parties.

What I am able to comment on is that from the years 2009 to 2019, I have not found that bankers viewing the output from the “Shadow” CAMELS model I developed to surprise them. Nor have I found that under circumstances where the non-agency model warranted deeper discussion with financial institutions concerning elements within that surveillance system that it was inaccurate in leading to questions that the institution was not prepared to answer indicating it was not a new question to them.

Based on this anecdotal experience, I have found no reason to believe that the agencies are applying component or composite criteria in manners that are not within reasonable proximity in terms of safety and soundness criteria regardless of the side or complexity of the covered institutions.

However, I would not go so far as to say this reasonableness is proven at this time. I do suggest some form of more rigorous study be done to confirm or deny the anecdotal indicator noted in this RFI response.

#### **2. To what extent do the agencies appropriately communicate and support each rating after an on-site examination or at the end of an examination cycle, including communicating the effect of each rating or finding on the composite rating?**

No comment on “communication and support”.

I am not in a position to comment on how institutions view post on-site interaction with agencies following an examination cycle. Nor would I able to comment on such matter without violating the confidentiality of the statutory constraints governing CAMELS matters.

I do also understand that culturally, banking institutions will tend to be reluctant to offer anything but non-neutral responses to such questions.

Regardless, I also understand that agencies have an interest in continuing to improve the quality of service that transacts between the agencies and institutions.

I respectfully suggest that regulators would be better served by performing a double-blind survey with each examinee at a more appropriate vehicle to collect this information.

**3. Does the agencies' use of the CAMELS rating system vary from one examination, or examination cycle, to the next? Please explain.**

Ibid. See question 2.

**4. Are the agencies generally consistent in their approach to assigning CAMELS ratings to institutions when compared to each other and across other supervisory agencies? What practices, if any, should the agencies consider implementing to enhance the consistent assignment of CAMELS ratings?**

No.

There are significant differences in approach to the evaluation of depository institution safety and soundness that appear across the regulatory and risk management spectrum, including federal, other government applications. The differences stem from the analytical, regulatory and enforcement mission needs germane to each use case.

The CAMELS regime has always been a singular agency to institution pairing process. The official methodology is optimized to have little comparability between subject institutions. This allows regulators to focus on to specific issues of the subject institution. There is merit to this specificity that allows regulators to tailor supervision in the best interest of each subject institution. There is validity to the notion that each of these individual tailored exercises contributes in aggregate to a viable strategy for managing economic systemic risk using a bottom up approach. I do not recommend that regulators abandon the CAMELS method because it is a good one.

Given that, the CAMELS process as it presently exists can be a cumbersome approach to analytics. It also relies on a cycle of repetition that may be too slow to adapt to the pace of economic stresses that now beset our financial system.

I believe there is a need for regulators to implement structure that can test for perturbations and anomalies emerging in subject institutions in between rigorous CAMELS examinations.

Past Federal Efforts Following the 2008 Crisis

A contract was issued by the U.S. Securities and Exchange Commission (SEC) in 2009. At the height of the financial crisis, the SEC's Division of Corporate Finance issued an RFP calling for a commercial vendor to develop a "Shadow" CAMELS type rating system. The challenge was to use only publicly available data and produce ratings covering 100% of all active institutions, to the extent possible, on a quarterly basis and delivered in a timely fashion. The RFP called for output in 1 to 5 CAMELS score format with granularity to at least one decimal place. The shadow indicators are comparable between institutions because the test regimen uses consistent analytics applied equally to all FDIC unit institutions.

Following the passage of the Dodd-Frank Act, the U.S. Treasury (UST) opened an initiative to explore innovations in analyzing the soundness of depository institutions particularly with regards to their ability to weather stress scenarios arising from systemic economic shocks. The initial discussions in this area considered the shock-response resiliency of depository institutions. At the time, it was thought the

ability of banks to model stress test risk was potentially too onerous for smaller banks and the scope of stress testing was reduced to covering only the largest institutions. As a result, it never became a mechanism that provided the ground up sum to systemic risk visibility of CAMELS nor a comparability tool that could be used to identify performance norms to form the basis of data-driven policy making applicable to the banking industry as a whole.

OCC Canary tests are another federal test regime. While not comprehensive measures of safety and soundness compared to CAMELS, the Canary testing process of the Office of the Comptroller of the Currency (OCC) is applied across all examined institutions. The tests provide a basis for comparability testing, at least with respect to those items of interest that the OCC is focused on at any given time.

In 2019, the FDIC and OCC both created Offices of Innovation designed to husband the introduction of Fintech into the banking sector. As of 2020, these areas of innovation seem to be headed in the direction of incrementally increasing the process efficiency of banking and regulation in an effort to keep pace with the innovations of non-bank sectors such as shadow banking and finance models as well as pure technology plays.

#### Non-Federal Efforts

Non-Federal efforts in terms of developing regulatory regimes have primarily revolved around facilitation of depository institutions to service regional needs. States operate programs that create relief or harbor from federal regulations. The states are in effect creating sanctuary zones from the most adverse effects of federal banking regulations on their local communities. Collateral relief and risk pooling are some of the more common strategies used by states to enable enhanced access to banking services for business, municipal and consumer access to banking within their sovereign zones.

It is important to note here that state and local government initiatives are guided by a core ethos not unlike those of federal regulators, everyone wants to keep their banks alive and healthy. In almost 30 years of working with the process, I have never detected that regulators at any level have anything but this goal in mind, even under dire of circumstances.

These local initiatives are, for the most part, isolated and disaggregated. They exist in stark contrast to the organization designs of global supply chains and information systems that are highly interlinked and codependent. My instinct as an analyst tells me that the current disaggregated approach would not qualify as an efficient wealth maximizing expression of what these local systems, in aggregate, could offer to the American economy.

See questions 5, 7, 8, 9 and 10 for suggested practices agencies might consider.

#### **5. To what extent do the agencies apply the CAMELS rating system in a manner that is sufficiently flexible to reflect differences between financial institutions such as size, business models, risks, and internal and external operating environments, as well as overall technological developments and emerging risks?**

The CAMELS ratings approach is remarkably flexible in its ability to accommodate a broad variety of financial institutions.

The systems models institution size differences quite well under both the federal Uniform Bank Peer Reporting (UBPR) segmentation system as well as other size determined regulatory threshold boundaries.

Analytically, CAMELS models very well as a complex option adjusted risk tree with some option coefficients being binary and other weighted in steps based on underlying regulations.

Behavioral norms to characterize business model nodes are can be modeled as contribution components with expected means and deviations that both naturally occur in the institutional ecosystem as well as being subject to hard boundaries as dictated by US law and/or rulemaking.

Wide varieties in business models fall well within the capability of the CAMELS process. It is able to assess the safety and soundness of commercial, credit card, trust and post Glass-Steagal business mix models in a manner that gives regulators the ability to determine an institution's unique risk practices profile.

A broad variety of internal and external operating environment elements are well accommodated in the flexibility of the Asset Quality, Management, Liabilities and Sensitivity to Market Risk elements of CAMELS.

#### Uniformity of Testing

Where CAMELS have weakness is in the uniformity of application of the matrix of assessment from institution to institution. There is a certain degree of randomness to how the regime will be applied to an individual institution as regulators tailor the conditions of the test to each examination cycle of a subject institution.

There has always been some a degree of concern that the weight of focus on a bank as it is being questioned does not always follow the same pass/fail criteria as a peer would be subjected to.

This is an artifact of the reality that exams are a process of discovery and treatment bound within the context of the firm specific risk of the subject and the tenacity of the humans involved, regulators and bankers.

The infrequency of the test taking place at three-year intervals, essentially once per business cycle, is a major contributor to the examinations being discovery exercises each time.

One potential remedy for this is for regulators to determine where a parallel, possibly internal only, non-intrusive constant (quarterly) observation regime might be useful for assisting examiners to at least begin each CAMELS exam with areas of interest driven out of a uniform test battery algorithm that is sensitive to the modeling optionality of banks.

This could enhance future understanding and expectations by regulators and depository institutions alike going into their comprehensive examinations.

It could also enhance comparability which could in turn lead to a better understanding of normal and deviant behaviors, borrowing concepts from the Sarbanes-Oxley risk testing approach, and allow for the earlier detection of emerging "Black Swan" tail risks.

### Innovation Risk is an Emerging Systemic Risk

Technological innovation will have business model consequences. The degree of potential structural disruption potential could go well beyond enhancing banking technology to replacing it with entirely new paradigms.

Known future pressures on the system include the possibility that branch and community banking might be replaced by entirely virtual banking.

Central banking funding methods may be replaced by distributed ledger funding methods that bypass or eliminate a variety of present institutional functions and services.

Technology innovation could be extendible down to individual persons with direct access to central banking federal accounts because of advances in the real-time payment universe.

The question of whether existing banking infrastructure or non-bank technology platforms are better suited to the future landscape of financial services is presently in flux.

The only certainty is change is underway. Regulators will face technology disrupting technology; not all of which will fit comfort zones or expectation. Within this state change environment, there will be a challenge to foster continued systemic stability as old institution business models are replaced by new ones.

I respectfully observe that the CAMELS examination regime will have to adapt to regulate a new generation of emerging risks stemming from innovation, the kind that might rapidly escalate to systemic risk. Some innovations will pay off and the others will succumb. The future may be both more transformational than we realize; and saddled with more lingering old technology that could translate into debilitating competitive stressors for those most dependent on it.

It is the task of regulators make sure the financial system does not to stifle progress even as we endure absorbing false starts and errors of acumen.

To enhance the consistent assignment of CAMELS ratings for a coming decade of potentially tumultuous change, regulators will have to incorporate both the ability to measure the systemic efficacy of innovation. Regulators must become adept at staying ahead of the crossover curves as innovations expire legacies. To ensure systemic stability, effective regulatory norms and limits must evolve alongside each innovation initiative.

Given the nature of technology-based innovation, multiple parallel initiatives are likely to arise together. This will be a basket of changes shock-response challenge. With respect, regulators will have to be proficient at measuring the portfolio risk impact of baskets of innovations options as they are expressed in each of the CAMELS components.

### External Risk

Regulatory tools to protect against externally driven Beta Risk remains a concern. The invisible shifting of systemic risk to an unanticipated tail threat has always been the hallmark of all regulatory debacles. The system failed to detect the toxicity of subprime lending amplified by risk shifting securitization that caused the 2008 crisis.

There is a fundamental weakness in the CAMELS process that makes it difficult for regulators to use this tool to prevent “Black Swan” events. CAMELS are designed to be institution-specific risk analysis tools. They excel at answering the question, “Is this depository institution still survivable? Have problems overwhelmed it to the point that the consent decree be acted upon?”

There is no comparability or net assessment power designed into a CAMELS. Those tools lie elsewhere in the system even though some of them probably should fall into the Sensitivities to Market Risk portion of the analysis.

For instance, despite the rigorous implementation of Liquidity Coverage Rule requirements, cash and equivalents flash crises still manifest in GSIB class institutions.

Stress scenario testing remains a sampling process isolated to Basel III class institutions that can afford the cost of analysis; even as issues such a leveraged corporate lending create worry across a far broader range of depository institutions.

And then there are unanticipated externalities such as a collapse of the global supply chain from a non-financial cause such as a pandemic that could trigger the need to alter the model of the global economic sustainability and financing norms.

The point here is that it’s not just innovation shock that needs to be fed into the ISLM sub-model of the US macro model. My observation here is that the letter “S” in CAMELS may be an area where regulators may need to place additional emphasis in the examination process both at the 3-year comprehensive review points and possibly within internal observation quarterly test points as well.

**6. To what extent does the scope of supervisory work performed during an examination cycle align with the components of the CAMELS rating system? Which areas, if any, should receive more or less emphasis in order to assign a CAMELS rating appropriately?**

No comment.

**7. What steps, if any, should the agencies take to promote the consistent application of the CAMELS framework in the supervisory process? Implications of CAMELS Ratings**

As noted in the answer to question 5, uniformity in the application of the complex option tree of analysis so that both regulatory personnel and depository institutions can understand the expectations of the process are vital.

This uniformity of analysis will become even more vital as technology innovation adds radical business model turnover; including, but not limited to, changing the organizational construct of existing institutions, consolidating or retiring obsolescent institutions or processes, and bringing on previously unregulated entities into the systemic risk management process, thus altering market competition factors.

Anticipating such things, regulators may wish to consider internal focusing internal innovation of their own processes and skill sets to adapt to this emerging challenge.

There are a number of regulatory compliance tools and rules that materially impact what a future CAMELS examination that, for lack of a better description, early stage handmade film condition. They



are costly exercises that trigger a reluctance to apply them systemically lest onerous burdens be imposed on institutions that have neither the wealth nor staffing to engage in such exercises.

Reducing or eliminating such burdens is a worthwhile goal for regulators as it both eases adoption and improves uniformity. It is respectfully suggested that the agencies take on the mission to explore non-burdensome approaches to measure risks that contribute to future CAMELS examination option trees that can be applied to broader swaths of regulated institutions as well as incoming new entities. What is important here is facilitating smoother and more efficient regulation by modernizing early stage concepts into technology enhanced mature ones.

**8. To what extent does an institution's condition, as reflected in its CAMELS ratings, affect the agencies' actions on applications, particularly for new or expanded business activities? To what extent, if any, should the agencies modify or clarify their approach?**

No comment on the present application process itself.

Given the emergence of business activities that could potentially have disruptive effects on legacy business models, it is recommended that regulators consider a holistic modeling approach with an emphasis on assessing the consequence effects of any innovation as part of a going forward approach to affecting the CAMELS ratings of new entrants as well as the safety and soundness profile of legacy participants.

Innovation can captivate institutions and put them into the equivalent of arms races trying to stay competitive, particularly so if the innovation creates a disruptive, existential change in the opportunity-cost impacting the entire industry.

Regulators will have to carefully navigate introducing innovation into the financial ecosystem while being mindful of the ever present potential that the golden egg they are hatching contains a black swan. In this regard, bold action with built-in "fail safe" would not be out of order as a guiding principle for innovation management.

**9. To what extent do the CAMELS ratings impact the issuance of enforcement actions? To what extent does the issuance of enforcement actions impact CAMELS ratings? To what extent, if any, should the agencies modify or clarify their approach?**

To be frank, in almost thirty years of observing the regulatory process, I have not seen enforcement actions trigger material consequence in CAMELS. I have tried incorporating enforcement action notices, including filtering for materiality, into "Shadow" CAMELS modeling and it has not shown to be predictive of either regulatory action or existential distress for institutions, particularly larger ones.

Ultimately, the component from the CAMELS that one watches to gauge bank survivability remains Capital Adequacy. The enforcement actions, including the establishment of consent decrees, are highly correlated to the capital status of an institution. Until this metric fails, the regulatory process is, if anything, tolerant and assistive in helping financial institutions do whatever it takes in the AMELS portion of the safety and soundness regimen to survive.

During the 2008 financial crisis, combining Asset Quality tracking with Capital Adequacy tracking provided increase visibility on the survivability of banks who's lending engines had been wounded by subprime lending. Eventually, the hemorrhage was contained, and bank failure rates declined.

Among the largest institutions, troublesome off-balance sheet exposure threatening to realize into real losses were of concern; but regulators, through great effort, brought these to bay and more prudential constraints instituted.

Historically, there have been very few incidents of “bolt from the blue” regulatory actions that did not follow the “watch the capital ratios” pattern, even during the period following the 2008 crisis. I can recall one bank that suffered a catastrophic asset quality collapse when a block of its obligors defaulted together and one instance where a bank holding company had all its bank units topple like dominoes in a week. These are rare events in the banking ecosystem, true firm specific beta events. And in both instances, regulators responded with aplomb.

Otherwise, federal regulation plods along methodically keeping institutions operating within prudential “safe lanes” appropriate to protecting federal interests.

Of note, non-federal government interests tend to prefer tighter lanes of prudential behavior when it comes to programs that expose their taxpayers. Commercial interests tend to prefer defining prudential lanes in their analytics mimicking the same leeway, or slightly wider, as federal regulators.

Should federal regulators change their approach?

No. Based on long terms observations of regulatory processes, I believe the “grave punishment as a last resort” pattern of regulation practiced at the federal level does serve the strategic interests of the Nation and do not recommend changing from such principles at this time.

**10. What steps, if any, should the agencies take to promote the consistent use of CAMELS ratings in applications and enforcement matters?**

I shall use this section of my comment to address future directions for ratings in processing applications and managing enforcement matters.

Projecting forward, regulatory systems must evolve alongside industrial practices and technology, particularly so in order to meet regulator mission needs to manage the systemic stability of technology and business model innovations.

The future of technology innovation in regulation will likely evolve to leave the hand-made film era behind and enter the universe of artificial intelligence enhanced robotic algorithmic analysis based on uniformly defined fuzzy logic rules. As alluded to earlier in this comment, CAMELS models well as a complex option tree analysis that is composed of many forks to account for a matrix of business model and environmental interaction options that are turn on or off based on the management choices of an institution.

This is a universe beyond main frames, spreadsheets and yellow pads. This is the universe of big data, machine-to-machine “things”, and self-exploring robots. This is a future where regulatory technology for banks looks much more like co-dependencies between measurements and infrastructure, where integrity, throughput and cybersecurity become mission critical to safeguard the stability of self-annealing financial networks and tapping into data to ensure emerging threats to the system are detected and mitigated expeditiously; think social media viral storm events, complete with mad scrambling to rule out false positive moments.

How weird can the future of regulation get? How about AI bots working with ethics algorithms to measure prudential behavior in response to indicators of tail risk emergence stemming from other AI bots modeling system-wide big data fueled shock-response risk detectors? In a world preparing to build technology to comply with things like an online retail anti-counterfeiting provision in a bilateral trade agreement that reaches down to low cost commodities, anything is possible; and likely probable.

There will be a need for regulators and regulated entities to adapt to a future of data-driven ratings built on well-founded principles of measurement concepts such as CAMELS.

Regulators will need such tools to perform individual examinations and make prudent decisions on applications and enforcement.

Policy makers will need such tools to manage economic policy to protect the US economy against systemic risks.

Depository institutions will need such tools, not just to interact with regulators, but to manage corporate planning and to demonstrate sustainability to clientele and investors.

All this hinges on the leadership of today's regulators to innovate the translation of regulatory ratings algorithms to form clear guidance for future downstream processes and robots.

I believe that regulators are in the process of preparing for these challenges and offer these comments to this request for information in the true spirit of being constructive.

Thank you for listening.

/s/Dennis Santiago

Analyst and Citizen